

2012 US-Japan workshop on Magnetic reconnection - May 23-25, 2012 - Princeton NJ.

Does the rate of collisionless magnetic reconnection depend on the dissipation mechanism?

Nicolas Aunai, Michael Hesse, Carrie Black, Rebekah Evans, and Maria Kuznetsova

Space Weather Laboratory, Code 674, NASA Goddard Space Flight Center, Greenbelt, Maryland 20771, USA

The importance of the electron dissipation effect on the reconnection rate is investigated in the general case of asymmetric collisionless magnetic reconnection. Contrary to the standard collisionless reconnection model, it is found that the reconnection rate, and then the macroscopic evolution of the reconnecting system, crucially depend on the nature of the dissipation mechanism and that the Hall effect alone is not able to sustain fast reconnection.